

=> file medline hcaplus embase biosis USPatFull
COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
6.65	6.86

FULL ESTIMATED COST

FILE 'MEDLINE' ENTERED AT 14:18:16 ON 05 JAN 2006

FILE 'HCAPLUS' ENTERED AT 14:18:16 ON 05 JAN 2006

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FILE 'EMBASE' ENTERED AT 14:18:16 ON 05 JAN 2006

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FILE 'BIOSIS' ENTERED AT 14:18:16 ON 05 JAN 2006

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FILE 'USPATFULL' ENTERED AT 14:18:16 ON 05 JAN 2006

CA INDEXING COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)

=> s Rhodobacter and tyrosine ammonia lyase

L1 25 RHODOBACTER AND TYROSINE AMMONIA LYASE

=> dup rem l1

PROCESSING COMPLETED FOR L1

L2 18 DUP REM L1 (7 DUPLICATES REMOVED)

=> s l2 and sphaeroides

L3 5 L2 AND SPHAEROIDES

=> d l3 1-5 ibib ab

L3 ANSWER 1 OF 5 MEDLINE on STN

ACCESSION NUMBER: 2004283018 MEDLINE

DOCUMENT NUMBER: PubMed ID: 15185374

TITLE: Exploring recombinant flavonoid biosynthesis in
metabolically engineered Escherichia coli.

AUTHOR: Watts Kevin T; Lee Pyung Cheon; Schmidt-Dannert Claudia

CORPORATE SOURCE: Department of Biochemistry, Molecular Biology and
Biophysics, University of Minnesota, 1479 Gortner Avenue,
St. Paul, MN 55108, USA.

CONTRACT NUMBER: T32 GM08347 (NIGMS)

SOURCE: Chembiochem : a European journal of chemical biology, (2004
Apr 2) 5 (4) 500-7.

Journal code: 100937360. ISSN: 1439-4227.

PUB. COUNTRY: Germany; Germany, Federal Republic of

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200407

ENTRY DATE: Entered STN: 20040609

Last Updated on STN: 20040801

Entered Medline: 20040730

AB Flavonoids are important plant-specific secondary metabolites synthesized from 4-coumaroyl coenzyme A (CoA), derived from the general phenylpropanoid pathway, and three malonyl-CoAs. The synthesis involves a plant type III polyketide synthase, chalcone synthase. We report the cloning and coexpression in Escherichia coli of phenylalanine ammonia lyase, cinnamate-4-hydroxylase, 4-coumarate:CoA ligase, and chalcone synthase from the model plant Arabidopsis thaliana. Simultaneous expression of all four genes resulted in a blockage after the first enzymatic step caused by the presence of nonfunctional cinnamate-4-hydroxylase. To overcome this problem we fed exogenous 4-coumaric acid to induced cultures. We observed high-level production of

the flavanone naringenin as a result. We were also able to produce phloretin by feeding cultures with 3-(4-hydroxyphenyl)propionic acid. Feeding with ferulic or caffeic acid did not yield the corresponding flavanones. We have also cloned and partially characterized a new **tyrosine ammonia lyase** from **Rhodobacter sphaeroides**. **Tyrosine ammonia lyase** was substituted for phenylalanine ammonia lyase and cinnamate-4-hydroxylase in our *E. coli* clones and three different growth media were tested. After 48 h induction, high-level production (20.8 mg L⁻¹) of naringenin in metabolically engineered *E. coli* was observed for the first time.

L3 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1242663 HCAPLUS
DOCUMENT NUMBER: 143:476548
TITLE: Fermentative preparation of para-hydroxycinnamic acid and cinnamic acid at alkaline pH
INVENTOR(S): Ben-Bassat, Arie; Sariaslani, Fateme Sima; Huang, Lisa L.; Patnaik, Ranjan; Lowe, David J.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 23 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005260724	A1	20051124	US 2005-105259	20050413
WO 2005116229	A2	20051208	WO 2005-US13867	20050420
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: US 2004-563633P P 20040420

AB Methods for the microbial prodn. of para-hydroxycinnamic acid (pHCA) and cinnamic acid (CA) are provided. Microbes producing either tyrosine or phenylalanine are grown in the presence of either tyrosine ammonium lyase or phenylalanine ammonium lyase resp. where some part of the fermn. is accomplished at alk. pH. The process results in greater yields and higher rates of para-hydroxycinnamic acid (pHCA) and cinnamic acid (CA) prodn. as compared with fermn. exclusively at physiol. pH.

L3 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:80857 HCAPLUS
DOCUMENT NUMBER: 140:141699
TITLE: Cloning, genomic and amino acid sequences of **tyrosine ammonia lyase** from **Rhodobacter sphaeroides** and applications in the production of p-hydroxycinnamic acid
INVENTOR(S): Huang, Lixuan; Xue, Zhixiong
PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Company, USA
SOURCE: PCT Int. Appl., 53 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004009795	A2	20040129	WO 2003-US23229	20030723
WO 2004009795	A3	20040910		

W: JP

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IT, LU, MC, NL, PT, RO, SE, SI, SK, TR

US 2004059103	A1	20040325	US 2003-621826	20030717
EP 1551858	A2	20050713	EP 2003-766021	20030723

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK

PRIORITY APPLN. INFO.:
US 2002-397820P P 20020723
WO 2003-US23229 W 20030723

AB A novel **tyrosine ammonia lyase** enzyme was identified in the bacterium **Rhodobacter sphaeroides**. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the prodn. of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was cloned by direct amplification using the genomic DNA and was expressed in E. coli.

L3 ANSWER 4 OF 5 USPATFULL on STN

ACCESSION NUMBER: 2005:240642 USPATFULL

TITLE: Flavonoids

INVENTOR(S): Schmidt-Dannert, Claudia, Shoreview, MN, UNITED STATES
Watts, Kevin, Minneapolis, MN, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005208643	A1	20050922
APPLICATION INFO.:	US 2005-69633	A1	20050301 (11)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2004-549077P	20040301 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	FISH & RICHARDSON P.C., PO BOX 1022, MINNEAPOLIS, MN, 55440-1022, US	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	37 Drawing Page(s)	
LINE COUNT:	3545	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods and materials related to producing flavonoids as well as other organic compounds. For example, the invention provides isolated nucleic acids, polypeptides, host cells, and methods and materials for producing flavonoids and other organic compounds.

L3 ANSWER 5 OF 5 USPATFULL on STN

ACCESSION NUMBER: 2004:77324 USPATFULL

TITLE: DNA and amino acid sequence of a **tyrosine ammonia lyase** enzyme from the bacterium **rhodobacter sphaeroides**

INVENTOR(S): Huang, Lixuan, Hockessin, DE, UNITED STATES
Xue, Zhixiong, Chadds Ford, PA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004059103	A1	20040325
APPLICATION INFO.:	US 2003-621826	A1	20030717 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2002-397820P	20020723 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	23	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Page(s)	
LINE COUNT:	1887	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB A novel **tyrosine ammonia lyase** enzyme was identified in the bacterium **Rhodobacter sphaeroides**. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the production of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was cloned by direct amplification using the genomic DNA and was expressed in E. coli.

=> d his

(FILE 'HOME' ENTERED AT 14:17:43 ON 05 JAN 2006)

FILE 'MEDLINE, HCAPLUS, EMBASE, BIOSIS, USPATFULL' ENTERED AT 14:18:09 ON 05 JAN 2006

FILE 'MEDLINE, HCAPLUS, EMBASE, BIOSIS, USPATFULL' ENTERED AT 14:18:16 ON 05 JAN 2006

L1 25 S RHODOBACTER AND TYROSINE AMMONIA LYASE
L2 18 DUP REM L1 (7 DUPLICATES REMOVED)
L3 5 S L2 AND SPHAEROIDES

=> s l2 and dna

L4 15 L2 AND DNA

=> d l4 1-15 ibib ab

L4 ANSWER 1 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1242663 HCAPLUS

DOCUMENT NUMBER: 143:476548

TITLE: Fermentative preparation of para-hydroxycinnamic acid and cinnamic acid at alkaline ph

INVENTOR(S): Ben-Bassat, Arie; Sariaslani, Fateme Sima; Huang, Lisa L.; Patnaik, Ranjan; Lowe, David J.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 23 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005260724	A1	20051124	US 2005-105259	20050413
WO 2005116229	A2	20051208	WO 2005-US13867	20050420
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,				

ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2004-563633P P 20040420

AB Methods for the microbial prodn. of para-hydroxycinnamic acid (pHCA) and cinnamic acid (CA) are provided. Microbes producing either tyrosine or phenylalanine are grown in the presence of either tyrosine ammonium lyase or phenylalanine ammonium lyase resp. where some part of the fermn. is accomplished at alk. pH. The process results in greater yields and higher rates of para-hydroxycinnamic acid (pHCA) and cinnamic acid (CA) prodn. as compared with fermn. exclusively at physiolo. pH.

L4 ANSWER 2 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:119885 HCAPLUS

DOCUMENT NUMBER: 140:162451

TITLE: Novel methods for synthesis of holo-photoactive yellow protein

INVENTOR(S): Kyndt, John Jozef Armand; Van Beeumen, Jozef

PATENT ASSIGNEE(S): Belg.

SOURCE: U.S. Pat. Appl. Publ., 32 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004029230	A1	20040212	US 2003-464609	20030618
PRIORITY APPLN. INFO.:			US 2002-389593P	P 20020618

AB The present invention is generally related to recombinant DNA technol. and more particularly to DNA strands useful for the prodn. of parahydroxycinnamic acid and photoactive yellow protein in a suitable host expression system.

L4 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:80857 HCAPLUS

DOCUMENT NUMBER: 140:141699

TITLE: Cloning, genomic and amino acid sequences of tyrosine ammonia lyase from Rhodobacter sphaeroides and applications in the production of p-hydroxycinnamic acid

INVENTOR(S): Huang, Lixuan; Xue, Zhixiong

PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Company, USA

SOURCE: PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004009795	A2	20040129	WO 2003-US23229	20030723
WO 2004009795	A3	20040910		

W: JP

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IT, LU, MC, NL, PT, RO, SE, SI, SK, TR

US 2004059103 A1 20040325 US 2003-621826 20030717

EP 1551858 A2 20050713 EP 2003-766021 20030723

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK
PRIORITY APPLN. INFO.: US 2002-397820P P 20020723
WO 2003-US23229 W 20030723

AB A novel **tyrosine ammonia lyase** enzyme was identified in the bacterium **Rhodobacter sphaeroides**. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the prodn. of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was cloned by direct amplification using the genomic DNA and was expressed in E. coli.

L4 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:950803 HCAPLUS

DOCUMENT NUMBER: 140:2349

TITLE: Protein and cDNA sequences of a tyrosine-inducible **tyrosine ammonia lyase** enzyme from *Trichosporon cutaneum*

INVENTOR(S): Breinig, Sabine; Qi, Wei Wei; Sariaslani, Fateme Sima; Vannelli, Todd; Xue, Zhixiong

PATENT ASSIGNEE(S): E. I. Du Pont de Nemours & Co., USA

SOURCE: PCT Int. Appl., 72 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003099232	A2	20031204	WO 2003-US17924	20030520
WO 2003099232	A3	20040910		
W: AU, JP				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
US 2004023357	A1	20040205	US 2003-439479	20030516
US 6951751	B2	20051004		
EP 1506305	A2	20050216	EP 2003-731592	20030520
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				

PRIORITY APPLN. INFO.: US 2002-383232P P 20020523
WO 2003-US17924 W 20030520

AB A novel tyrosine-inducible **tyrosine ammonia lyase** enzyme was isolated from *Trichosporon cutaneum*. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the prodn. of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was sequenced using 3 and 5 RACE cloning of the TAL cDNA and the gene was expressed in the *Saccharomyces cerevisiae* and in the *Escherichia coli*.

L4 ANSWER 5 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2005:240642 USPATFULL

TITLE: Flavonoids

INVENTOR(S): Schmidt-Dannert, Claudia, Shoreview, MN, UNITED STATES
Watts, Kevin, Minneapolis, MN, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005208643	A1	20050922
APPLICATION INFO.:	US 2005-69633	A1	20050301 (11)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2004-549077P	20040301 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	FISH & RICHARDSON P.C., PO BOX 1022, MINNEAPOLIS, MN,	

55440-1022, US
NUMBER OF CLAIMS: 20
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 37 Drawing Page(s)
LINE COUNT: 3545

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention provides methods and materials related to producing flavonoids as well as other organic compounds. For example, the invention provides isolated nucleic acids, polypeptides, host cells, and methods and materials for producing flavonoids and other organic compounds.

L4 ANSWER 6 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2005:171307 USPATFULL

TITLE: Methods for the production of tyrosine, cinnamic acid and para-hydroxycinnamic acid

INVENTOR(S): Qi, Wei Wei, 3821 Brunswick Avenue, Drexel Hill, PA, UNITED STATES 19026
Sariaslani, Fateme Sima, Wilmington, DE, UNITED STATES
Tang, Xiao-song, Hockessin, DE, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005148054	A1	20050707
APPLICATION INFO.:	US 2003-476198	A1	20020503 (10)
	WO 2002-US18551		20020503

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-288701P	20010504 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	S Neil Feltham, E I du Pont de Nemours and Company, Legal Patent Records Center, 4417 Lancaster Pike, Wilmington, DE, 19805, US	

NUMBER OF CLAIMS: 12
EXEMPLARY CLAIM: 1
LINE COUNT: 2319

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Genes encoding phenylalanine ammonia-lyase (PAL), **tyrosine ammonia lyase** (TAL) and phenylalanine hydroxylase (PAH) have been introduced into a host organism for the production of Para-hydroxycinnamic acid (PHCA). The introduction of these genes results in the redirection of carbon flow in the host, optimizing the flow of carbon from glucose to PHCA. The intermediates, tyrosine and cinnamic acid are also produced.

L4 ANSWER 7 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2004:314595 USPATFULL

TITLE: Method for preparing para-hydroxystyrene by biocatalytic decarboxylation of para-hydroxycinnamic acid in a biphasic reaction medium

INVENTOR(S): Ben-Bassat, Arie, Newark, DE, UNITED STATES
Haynie, Sharon L., Philadelphia, PA, UNITED STATES
Lowe, David J., Wilmington, DE, UNITED STATES
Huang, Lisa L., Hockessin, DE, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004248267	A1	20041209
APPLICATION INFO.:	US 2004-824581	A1	20040414 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-462827P	20030414 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT
RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417
LANCASTER PIKE, WILMINGTON, DE, 19805
NUMBER OF CLAIMS: 40
EXEMPLARY CLAIM: 1
LINE COUNT: 2088

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A biocatalytic method for preparing para-hydroxystyrene from para-hydroxycinnamic acid is described. The method uses an enzyme source having para-hydroxycinnamic acid decarboxylase activity to catalyze the decarboxylation of para-hydroxycinnamic acid in a biphasic reaction medium to produce para-hydroxystyrene, which is extracted into the organic phase of the biphasic reaction medium. The method results in a high yield of para-hydroxystyrene due to the decreased exposure of the enzyme source to the inhibitory product. The product is readily recovered from the extractant, or may be chemically derivatized directly in the extractant before recovery.

L4 ANSWER 8 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2004:292242 USPATFULL
TITLE: Method for producing para-hydroxystyrene and other multifunctional aromatic compounds using two-phase extractive fermentation
INVENTOR(S): Ben-Bassat, Arie, Newark, DE, UNITED STATES
Lowe, David J., Wilmington, DE, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004229326	A1	20041118
APPLICATION INFO.:	US 2004-824237	A1	20040414 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2003-462827P	20030414 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT
RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417
LANCASTER PIKE, WILMINGTON, DE, 19805
NUMBER OF CLAIMS: 27
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Page(s)
LINE COUNT: 1680

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Methods are provided for the production and recovery of multifunctional aromatic compounds from a fermentation medium. Preferred multifunctional aromatic compounds include para-hydroxycinnamic acid (pHCA), cinnamic acid (CA), and para-hydroxystyrene (pHS). The multifunctional aromatic compounds may be produced in a biphasic growth medium comprising a fermentation medium having a specified volume of an extractant. The multifunctional aromatic compounds are extracted into the extractant and recovered by standard means.

L4 ANSWER 9 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2004:77324 USPATFULL
TITLE: DNA and amino acid sequence of a tyrosine ammonia lyase enzyme from the bacterium rhodobacter sphaeroides
INVENTOR(S): Huang, Lixuan, Hockessin, DE, UNITED STATES
Xue, Zhixiong, Chadds Ford, PA, UNITED STATES

NUMBER	KIND	DATE
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PATENT INFORMATION:	US 2004059103	A1	20040325	
APPLICATION INFO.:	US 2003-621826	A1	20030717	(10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2002-397820P	20020723 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	23	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	2 Drawing Page(s)	
LINE COUNT:	1887	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A novel **tyrosine ammonia lyase** enzyme was identified in the bacterium **Rhodobacter sphaeroides**. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the production of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was cloned by direct amplification using the genomic DNA and was expressed in E. coli.

L4 ANSWER 10 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2004:31218 USPATFULL

TITLE: DNA and amino acid sequences of a tyrosine-inducible **tyrosine ammonia lyase** enzyme from the yeast **Trichosporon cutaneum**

INVENTOR(S): Breinig, Sabine, Philadelphia, PA, UNITED STATES
Qi, Wei Wei, Broomall, PA, UNITED STATES
Sariaslani, Fateme Sima, Wilmington, DE, UNITED STATES
Vannelli, Todd M., Ithaca, NY, UNITED STATES
Xue, Zhixiong, Chadds Ford, PA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004023357	A1	20040205
	US 6951751	B2	20051004
APPLICATION INFO.:	US 2003-439479	A1	20030516 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2002-383232P	20020523 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	22	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	3 Drawing Page(s)	
LINE COUNT:	2502	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A novel tyrosine-inducible **tyrosine ammonia lyase** enzyme was isolated from the yeast **Trichosporon cutaneum**. This enzyme has a higher activity for tyrosine than for phenylalanine and is useful for the production of para-hydroxycinnamic acid directly from tyrosine. The gene encoding this enzyme was sequenced using 3' and 5' RACE cloning of the TAL cDNA and the gene was expressed in the yeast *Saccharomyces cerevisiae* and in the bacterium *Escherichia coli*.

L4 ANSWER 11 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2004:24761 USPATFULL
TITLE: Microbial conversion of glucose to para-hydroxystyrene
INVENTOR(S): Ben-Bassat, Arie, Newark, DE, UNITED STATES
Qi, Wei Wei, Broomall, PA, UNITED STATES
Sariaslani, Fateme Sima, Wilmington, DE, UNITED STATES
Tang, Xiao-Song, Hockessin, DE, UNITED STATES
Vannelli, Todd M., Ithaca, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004018600	A1	20040129
APPLICATION INFO.:	US 2003-439478	A1	20030516 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2002-383450P	20020523 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	21	
EXEMPLARY CLAIM:	1	
LINE COUNT:	2653	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An in vivo method for the production of pHS via a recombinant host cell is disclosed. The host cell expresses at least one gene encoding a polypeptide having para-hydroxycinnamic acid decarboxylase activity in combination with either at least one gene encoding a polypeptide having tyrosine ammonia lyase activity or at least one gene encoding a polypeptide having phenylalanine ammonia lyase activity.

L4 ANSWER 12 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2003:244425 USPATFULL
TITLE: Bioproduction of para-hydroxycinnamic acid
INVENTOR(S): Gatenby, Anthony A., Wilmington, DE, UNITED STATES
Sariaslani, F. Sima, Wilmington, DE, UNITED STATES
Tang, Xiao-Song, Hockessin, DE, UNITED STATES
Qi, Wei Wei, Drexel Hill, PA, UNITED STATES
Vannelli, Todd, Ithaca, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003170834	A1	20030911
APPLICATION INFO.:	US 2002-188523	A1	20020703 (10)
RELATED APPLN. INFO.:	Division of Ser. No. US 2001-765873, filed on 19 Jan 2001, PENDING Continuation-in-part of Ser. No. US 2000-627216, filed on 27 Jul 2000, GRANTED, Pat. No. US 6368837		

	NUMBER	DATE
PRIORITY INFORMATION:	US 1999-147719P	19990806 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	26	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	5 Drawing Page(s)	
LINE COUNT:	4748	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides several methods for biological production

of para-hydroxycinnamic acid (PHCA). The invention is also directed to the discovery of new fungi and bacteria that possess the ability to convert cinnamate to PHCA. The invention relates to developing of a new biocatalyst for conversion of glucose to PHCA by incorporation of the wild type PAL from the yeast *Rhodotorula glutinis* into *E. coli* underlining the ability of the wildtype PAL to convert tyrosine to PHCA. The invention is also directed to developing a new biocatalyst for conversion of glucose to PHCA by incorporation of the wildtype PAL from the yeast *Rhodotorula glutinis* plus the plant cytochrome P-450 and the cytochrome P-450 reductase into *E. coli*. In yet another embodiment, the present invention provides for the developing of a new biocatalyst through mutagenesis of the wild type yeast PAL which possesses enhanced **tyrosine ammonia-lyase (TAL)** activity.

L4 ANSWER 13 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2003:114511 USPATFULL
 TITLE: Methods for the production of tyrosine, cinnamic acid and para-hydroxycinnamic acid
 INVENTOR(S): Qi, Wei Wei, Drexel Hill, PA, UNITED STATES
 Sariaslani, Fateme Sima, Wilmington, DE, UNITED STATES
 Tang, Xiao-Song, Hockessin, DE, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003079255	A1	20030424
APPLICATION INFO.:	US 2002-138970	A1	20020503 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-288701P	20010504 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL PATENT RECORDS CENTER, BARLEY MILL PLAZA 25/1128, 4417 LANCASTER PIKE, WILMINGTON, DE, 19805	
NUMBER OF CLAIMS:	12	
EXEMPLARY CLAIM:	1	
LINE COUNT:	2332	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Genes encoding phenylalanine ammonia-lyase (PAL), **tyrosine ammonia lyase (TAL)** and phenylalanine hydroxylase (PAH) have been introduced into a host organism for the production of Para-hydroxycinnamic acid (PHCA). The introduction of these genes results in the redirection of carbon flow in the host, optimizing the flow of carbon from glucose to PHCA. The intermediates, tyrosine and cinnamic acid are also produced.

L4 ANSWER 14 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2002:75234 USPATFULL
 TITLE: Bioproduction of para-hydroxycinnamic acid
 INVENTOR(S): Gatenby, Anthony A., Wilmington, DE, United States
 Sariaslani, Sima, Newark, DE, United States
 Tang, Xiao-Song, Hockessin, DE, United States
 Qi, Wei Wei, Drexel Hill, PA, United States
 Vannelli, Todd, Ithaca, NY, United States
 PATENT ASSIGNEE(S): E. I. du Pont Nemours and Company, Wilmington, DE, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6368837	B1	20020409
APPLICATION INFO.:	US 2000-627216		20000727 (9)

NUMBER	DATE
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PRIORITY INFORMATION: US 1999-147719P 19990806 (60)
DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Prouty, Rebecca E.
ASSISTANT EXAMINER: Steadman, David J.
NUMBER OF CLAIMS: 10
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 2706

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides several methods for biological production of para-hydroxycinnamic acid (PHCA). The invention is also directed to the discovery of new fungi and bacteria that possess the ability to convert cinnamate to PHCA. The invention relates to developing of a new biocatalyst for conversion of glucose to PHCA by incorporation of the wild type PAL from the yeast *Rhodotorula glutinis* into *E. coli* underlining the ability of the wildtype PAL to convert tyrosine to PHCA. The invention is also directed to developing a new biocatalyst for conversion of glucose to PHCA by incorporation of the wildtype PAL from the yeast *Rhodotorula glutinis* plus the plant cytochrome P-450 and the cytochrome P-450 reductase into *E. coli*. In yet another embodiment, the present invention provides for the developing of a new biocatalyst through mutagenesis of the wild type yeast PAL which possesses enhanced **tyrosine ammonia-lyase (TAL)** activity.

L4 ANSWER 15 OF 15 USPATFULL on STN

ACCESSION NUMBER: 2001:233615 USPATFULL
TITLE: Bioproduction of para-hydroxycinnamic acid
INVENTOR(S): Tang, Xiao-Song, Hockessin, DE, United States

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2001053847	A1	20011220
	US 6521748	B2	20030218
APPLICATION INFO.:	US 2001-765873	A1	20010119 (9)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 2000-627216, filed on 27 Jul 2000, PENDING		

	NUMBER	DATE
PRIORITY INFORMATION:	US 1999-147719P	19990806 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	E I DU PONT DE NEMOURS AND COMPANY, LEGAL DEPARTMENT - PATENTS, 1007 MARKET STREET, WILMINGTON, DE, 19898	
NUMBER OF CLAIMS:	26	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	5 Drawing Page(s)	
LINE COUNT:	3566	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention provides several methods for biological production of para-hydroxycinnamic acid (PHCA). The invention is also directed to the discovery of new fungi and bacteria that possess the ability to convert cinnamate to PHCA. The invention relates to developing of a new biocatalyst for conversion of glucose to PHCA by incorporation of the wild type PAL from the yeast *Rhodotorula glutinis* into *E. coli* underlining the ability of the wildtype PAL to convert tyrosine to PHCA. The invention is also directed to developing a new biocatalyst for conversion of glucose to PHCA by incorporation of the wildtype PAL from the yeast *Rhodotorula glutinis* plus the plant cytochrome P-450 and the cytochrome P-450 reductase into *E. coli*. In yet another embodiment, the present invention provides for the developing of a new biocatalyst through mutagenesis of the wild type yeast PAL which possesses enhanced **tyrosine ammonia-lyase (TAL)** activity.

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(FILE 'HOME' ENTERED AT 14:17:43 ON 05 JAN 2006)

FILE 'MEDLINE, HCAPLUS, EMBASE, BIOSIS, USPATFULL' ENTERED AT 14:18:09 ON
05 JAN 2006

FILE 'MEDLINE, HCAPLUS, EMBASE, BIOSIS, USPATFULL' ENTERED AT 14:18:16 ON
05 JAN 2006

L1 25 S RHODOBACTER AND TYROSINE AMMONIA LYASE
L2 18 DUP REM L1 (7 DUPLICATES REMOVED)
L3 5 S L2 AND SPHAEROIDES
L4 15 S L2 AND DNA

=> log y

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

55.96

62.82

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

-4.50

-4.50

STN INTERNATIONAL LOGOFF AT 14:23:36 ON 05 JAN 2006